UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,294	08/17/2001	Hormuzd M. Khosravi	884.436US1	4878

21186 7590 09/16/2005		EXAMINER	
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MINNEAPOLIS, MN 55402-0938		ART UNIT	PAPER NUMBER
		2665	

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

		Application No.	**Applicant(s)**
Office Action Summary		09/932,294	KHOSRAVI ET AL.
		Examiner	**Art Unit**	
		Daniel J. Ryman	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 August 2001*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
   closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10, 13 and 16-30* is/are rejected.

7)☒ Claim(s) *4-6, 11, 12, 14, 15, 19, 27 and 28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
      application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1.   Claim 4 is objected to because of the following informalities: in line 2, "the ingress-forwarding" should be "an ingress-forwarding" and in line 3, "the encapsulation" should be "an encapsulation". Appropriate correction is required.

2.   Claim 5 is objected to because of the following informalities: in line 3, "the egress-forwarding" should be "an egress-forwarding". Appropriate correction is required.

3.   Claim 6 is objected to because of the following informalities: in line 3, "the checksum" should be "a checksum" and in line 5, "a checksum" should be "the checksum". Appropriate correction is required.

4.   Claim 19 is objected to because of the following informalities: in line 9, "a plurality of forwarding" should be "the plurality of forwarding". Appropriate correction is required.

5.   Claims 27 and 28 are objected to since these claims are repetitions of one another. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7.   Claims 4 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8.   Claims 4 and 5 recites the limitation "the egress-port" in line 1. There is insufficient

antecedent basis for this limitation in the claim. An egress port is a limitation of claims 2 and 3;

however, claims 4 and 5 depends upon claim 1.

Claim Rejections - 35 USC § 102

9.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10.   Claims 9, 10, and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by

Andersson et al. (USPN 6,449,275).

11.   Regarding claims 9, 10, and 13, Andersson discloses a method to calculate of a routing

table comprising: determining the routing table from at least one routing update message

(response by connection setup manager) (col. 3, lines 15-38); determining the presence of an

egress-port in the forwarding element (col. 3, lines 15-38) where the connection setup requires

knowledge of the ports involved in the connection; and altering the routing table for each of a

plurality of forwarding elements in the router in reference to presence of an egress-port in the

forwarding element (col. 3, lines 15-38) where "altering the routing table . . . in reference to

presence of an egress-port in the forwarding element" allows only some of the forwarding

elements to have the routing tables altered depending on the element's relation to the egress-port.

12.   Claims 16-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Jennings et al.

(USPN 6,807,175).

13.   Regarding claims 16 and 19, Jennings discloses a method to switch at least one internal packet comprising: applying a switch-label (flags and tags) to at least one packet, wherein the switch-label uniquely identifies a port/next-hop on the egress-forwarding element of a plurality of forwarding elements that are operably coupled to each other through a transfer connection (col. 3, lines 52-col. 4, line 30) where the flags indicate the destination VLAN and where the destination VLAN designates a particular port; and wherein the transfer connection is selected from the group consisting of a single bus (connection from receive port to transfer port within a single module), and a switched backplane/interconnect (ref. 35: connection between different modules) (Figs. 3 and 5 and col. 5, lines 1-41); and transferring the packet between the plurality of forwarding elements (Figs. 3 and 5 and col. 5, lines 1-41).

14.   Regarding claims 17 and 20, Jennings discloses that the applying is performed by an ingress forwarding element (col. 3, lines 52-col. 4, line 30).

15.   Regarding claims 18 and 21, Jennings discloses receiving the packet (Figs. 3 and 5 and col. 5, lines 1-41); removing the switch-label from the packet (Figs. 3 and 5 and col. 5, lines 1-41) where it is inherent that the switch-label is removed; completing layer-2 encapsulation (addition of source MAC address) of the packet in reference to an external network (Figs. 3 and 5 and col. 5, lines 1-41); and transmitting the packet, wherein the receiving, the removing, the completing and the transmitting are performed by an egress-FE (Figs. 3 and 5 and col. 5, lines 1-41).

Claim Rejections - 35 USC § 103

16.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17.   Claims are 1-4, 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Jennings et al. (USPN 6,807,175) in view of Bakke et al. (USPN 5,566,170).

18.   Regarding claims 1 and 6, Jennings discloses a method comprising: decrementing a

time-to-live field of the header (Fig. 5; col. 3, lines 51-64; col. 4, lines 42-50; and col. 5, lines

26-41) where the transmit processing block (ref. 58), which performs packet modification, is

located only at the transmit port (ref. 59) (and not at ports to other modules (ref. 35)) such that

packet modification only occurs once in the router, namely at transmission; recalculating a

checksum of the header (Fig. 5; col. 3, lines 51-64; col. 4, lines 42-50; and col. 5, lines 26-41);

performing a route lookup (Fig. 5 and col. 5, lines 1-41) where the look-up and forwarding

engine (ref. 52 and 53) is only used for packets entering the router from the receive ports (ref.

51) such that lookup only occurs once in the router; determining an egress-port (col. 5, lines 17-

20); and forwarding the packet in reference to the egress-port of the packet (col. 5, lines 1-41),

wherein the decrementing a time-to-live, the recalculating a checksum, and the performing a

route lookup are performed only once for the packet during transfer within a router (Fig. 5 and

col. 5, lines 1-41).

        Jennings does not expressly disclose validating a header of a packet from a checksum of

the packet and performing this validation only once for a packet during transfer within a router.

However, Jennings does disclose receiving a packet containing a checksum (col. 2, line 64-col.

3, line 7) and performing a look-up only once during transfer within a router (Fig. 5 and col. 5,

lines 1-41). Bakke teaches, in a routing system, validating a header of a packet from a checksum

of the packet only once for a packet during transfer within a router (col. 5, lines 3-5; col. 5, lines

53-60; and col. 5, line 63-col. 6, line 1) where it is implicit that this is done to ensure that the

packet is not corrupted. Thus, it would have been obvious to one of ordinary skill in the art at the

time of the invention to validate a header of a packet from a checksum of the packet and to

perform this validation only once for a packet during transfer within a router in order to ensure

that the packet is not corrupted.

19.   Regarding claim 2, Jennings in view of Bakke discloses that the performing a route

lookup further comprises: determining a next-hop; and determining an egress-port (Jennings: col.

col. 5, lines 1-41) where it is implicit that the next-hop is determined since this is a well known

part of "well-known look-up and forwarding."

20.   Regarding claim 3, Jennings in view of Bakke discloses that the forwarding further

comprises: forwarding the packet in reference to the egress-port (Jennings: col. col. 5, lines 1-

41).

21.   Regarding claims 4 and 7, Jennings in view of Bakke discloses that the egress-port

further comprises a local port (ref. 35) on the ingress-forwarding element (Jennings: Figs. 3 and

5 and col. 5, lines 1-41), and the forwarding further comprises: completing the encapsulation

(add routing tags) of the packet (Jennings: col. 3, lines 52-col. 4, line 30); and transmitting the

packet over the local-egress-port (Jennings: col. 3, line 52-col. 4, line 30 and col. 5, lines 1-41).

22.   Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jennings

et al. (USPN 6,807,175) in view of Bakke et al. (USPN 5,566,170) as applied to claims 1 and 6

above, and further in view of Andersson et al. (USPN 6,449,275).

23.   Regarding claims 5 and 8, Jennings in view of Bakke discloses that the egress-port

further comprises a remote port (ref. 59), and the forwarding further comprises: forwarding the

packet to the egress-forwarding element through an internal bus (backplane) of the router

(Jennings: Figs. 3 and 5 and col. 5, lines 1-41); applying a label (flags and tags) that corresponds

to the egress-port and next hop (Jennings: col. 3, lines 52-col. 4, line 30) where the flags indicate

the destination VLAN; removing the label (Jennings: Figs. 3 and 5 and col. 5, lines 1-41) where

it is implicit that the label is removed; completing the layer-2 encapsulation (add MAC source

address) of the packet (Jennings: Figs. 3 and 5 and col. 5, lines 1-41); and transmitting the packet

over the egress-port (Jennings: Figs. 3 and 5 and col. 5, lines 1-41).

Jennings in view of Bakke does not expressly disclose determining the next hop and the

egress-port on which the packet is to be transmitted in reference to the switch-label (Jennings:

col. 3, lines 52-col. 4, line 30). However, Jennings in view of Bakke does disclose that the look-

up table is only consulted once during a packet's transit through a router (Fig. 5 and col. 5, lines

1-41). Andersson teaches, in a modular router, using a switch-label to determine the next hop and

the egress-port on which the packet is to be transmitted (col. 2, line 66-col. 3, line 15) in order to

reduce the number of internal control paths (col. 3, lines 60-63). Thus, it would have been

obvious to one of ordinary skill in the art at the time of the invention to determine the next hop

and the egress-port on which the packet is to be transmitted in reference to the switch-label in

order to reduce the number of internal control paths.

24.   Claims 22-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jennings et

al. (USPN 6,807,175) in view of Andersson et al. (USPN 6,449,275).

25.   Regarding claims 22 and 25, Jennings discloses a system comprising: a plurality of

forwarding elements (Fig. 3 and col. 3, lines 40-64). Jennings does not expressly disclose a

control element operably coupled through a switched interconnect/backplane to the plurality of

forwarding elements further comprising a processor and software means operative on the

processor for generating a switch-label table for each forwarding element. Andersson teaches, in

a modular routing system, having a control element (connection setup manager) operably

coupled through a switched interconnect/backplane to the plurality of forwarding elements (col.

3, lines 15-38) where the control element further comprises a processor and software means

operative on the processor for generating a switch-label table for each forwarding element (col.

3, lines 15-38) in order to reduce the number of internal control paths required (col. 3, lines 60-

63). Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to have a control element operably coupled through a switched interconnect/backplane

to the plurality of forwarding elements further comprising a processor and software means

operative on the processor for generating a switch-label table for each forwarding element in

order to reduce the number of internal control paths required.

26.   Regarding claims 23 and 26, Jennings in view of Andersson discloses that one of the

forwarding elements further comprises an egress forwarding element and another one of the

forwarding elements further comprises an ingress forwarding element (Jennings: Figs. 3 and 5

and col. 5, lines 1-41), which receives packets from an external networking environment,

generates a local switch-label and associates the switch label with the packet (Jennings: col. 3,

lines 52-col. 4, line 30 and Andersson: col. 3, lines 15-38), the ingress forwarding element

further comprises a packet forwarding component that forwards the packet through the apparatus

using the switch-label (Jennings: col. 3, lines 52-col. 4, line 30 and Andersson: col. 3, lines 15-38).

27.   Regarding claims 24, 27, and 28, Jennings in view of Andersson discloses that the ingress forwarding element further decrements the time-to-live indicator by one, and recalculates the header checksum (Jennings: Fig. 5; col. 3, lines 51-64; col. 4, lines 42-50; and col. 5, lines 26-41). Jennings in view of Andersson does not expressly disclose that the ingress forwarding element further validates the packet header checksum; however, Examiner takes official notice that such steps are well known in the art in order to ensure that the packet is not corrupted. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to validate the packet header checksum in order to ensure that the packet is not corrupted.

28.   Regarding claim 29, Jennings in view of Andersson discloses that the control element further comprises a route table manager that maintains a routing table (Andersson: col. 3, lines 15-38).

29.   Regarding claim 30, Jennings in view of Andersson discloses discloses that the apparatus is a router (Jennings: col. col. 2, lines 58-63).

Allowable Subject Matter

30.   Claims 11, 12, 14, and 15 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not disclose or fairly suggest that the switch-label is added only to forwarding elements that do not contain an egress-port. Rather, Andersson discloses that the switch-label is added only to forwarding elements containing the egress-ports participating in the connection (col. 3, lines 15-38).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (571)272-3152. The examiner can normally be reached on Mon.-Fri. 7:00-4:30 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel J. Ryman
Examiner
Art Unit 2665

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